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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/876,227	06/08/2001	Mark Neuschutz	MERCK 2276	6191

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EXAMINER

PATEL, NIHIR B

ART UNIT	PAPER NUMBER
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3743

DATE MAILED: 07/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/876,227

Applicant(s)

NEUSCHUTZ ET AL.

Examiner

Nihir Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 0 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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Election/Restrictions

1. Applicant's election without traverse of the fifth species or fifth embodiment of figure 5 in Paper No. 8 is acknowledged.

Claims 2,3, and 4 are hereby withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a non-elected inventions, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1,6 through 11, and 14 through 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Referring to claim 1, there is insufficient antecedent basis for limitations "the phase change material" and "the heat conducting unit".

Referring to claim 6, there is insufficient antecedent basis for limitations "the phase change material".

Referring to claims 7 and 8, there is insufficient antecedent basis for limitations "the heat conducting unit".

Referring to claim 9, there is insufficient antecedent basis for limitations "the heat generating electronic component" and "the heat conducting unit".

Referring to claim 10, there is insufficient antecedent basis for limitations "the electronic component" and "a component (Z)".

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Referring to claim 9, and 11, there is insufficient antecedent basis for limitations “a component (Z)”.

Referring to claims 14,15, and 16 there is insufficient antecedent basis for limitations “the heat sink”, “the heat absorbing means (component)”, and “the phase change material”.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,6,7,8,9,14,15, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Laing U.S. Patent No. 3,780,356. Referring to claim 1, Laing discloses a cooling device for semiconductor components that comprises a heat conducting unit (2) and a heat absorbing unit (3) which contains a phase change material, wherein the phase change material is arranged in such a way that heat flow from the electrical or electronic component (1) to the heat conducting unit (2) is not interrupted and a significant heat flow to the phase change material only occurs if the temperature of the heat conducting unit (2) exceeds phase change temperature of the phase change material. Refer to figure 1, column 2 lines 35 through 70, and column 3 lines 1 through 5.

Referring to claim 6, Laing shows that the phase change material is encapsulated (3). Refer to figure 1 column 2 lines 40 through 50.

Referring to claim 7, Laing shows that the heat-conducting unit has surface area-increasing structures. Refer to figure 1 and column 2 lines 45 through 50.

Referring to claim 8, Laing shows that the heat-conducting unit has cooling fins. Refer to figure 1 and column 2 lines 45 through 50.

Referring to claim 9, Laing shows that the heat-generating electronic component (1) wherein heat-conducting unit, phase change material, and electronic component (1) are arranged in such a way that the heat flow between the heat-generating electronic component (1) and the heat-conducting unit take place in direct contact. Refer to figure 1.

Referring to claim 14, Laing discloses a cooling device for semiconductor components that comprises a heat sink and a heat absorbing component containing a phase change material, wherein heat flows from the heat sink to the heat-absorbing component when the heat sink temperature exceeds the phase change temperature of the phase change material. Refer to figure 1, column 2 lines 35 through 70, and column 3 lines 1 through 5.

Referring to claim 15, Laing discloses a cooling device for semiconductor components that comprises a heat sink means and a heat-absorbing means containing a phase change material, wherein heat flows from the heat sink means to the heat-absorbing means when the heat sink temperature exceeds the phase change temperature of the phase change material. Refer to figure 1, column 2 lines 35 through 70, and column 3 lines 1 through 5.

Referring to claim 16, Laing discloses a cooling device for semiconductor components that comprises a device for absorbing heat that's in contact with a heat-generating electric or electronic component, a heat sink and a heat-absorbing component containing a phase change material, wherein heat flows from the heat sink to the heat absorbing component when the heat sink temperature exceeds the phase change material. Refer to figure 1, column 2 lines 35 through 70, and column 3 lines 1 through 5.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Laing U.S. Patent No. 3,780,356 in view of Buckley U.S. Patent No. 5,722,482.

Laing discloses the applicant's invention as claimed with the exception of using a solid-solid phase change material.

Buckley discloses a phase change thermal control materials, method and apparatus that does use a solid-solid phase change material. Therefore it would be obvious to modify Laing's invention by using a solid-solid phase change material in order to absorb the heat quickly.

Claims 10,11,12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laing U.S. Patent No. 3,780,356 in view of Bunyan et al. U.S. Patent No. 6,054,198.

Referring to claims 10 and 11, Laing discloses the applicant's invention as claimed with the exception of stating that the electronic component is a computer CPU or memory chip.

Bunyan discloses a conformal thermal interface material for electronic components that does state that the electronic could be computer CPU or a memory chip. Therefore it would be obvious to modify Laing's invention by stating that the electronic component is a computer CPU or memory chip so that one knows the limitations of the invention.

Referring to claim 12, Laing discloses the applicant's invention as claimed with the exception of stating that the electrical component is contained within an electronic data processing system.

Bunyan discloses a conformal thermal interface material for electronic components that does state that the electronic component could be contained within an electronic data processing system. Therefore it would be obvious to modify Laing's invention by stating that the electronic component could be contained within an electronic data processing system so that one knows the limitations of the invention.

Referring to claim 13, Laing discloses the applicant's invention as claimed with the exception of stating that the electrical component is used in a mobile communication power switch or power circuit, a mobile telephone or fixed transmitter transmission circuit, an electromechanical actuator control circuit, a satellite communication or radar application high frequency circuit, or a domestic appliance or industrial electronic actuator or control unit is.

Bunyan discloses a conformal thermal interface material for electronic components that does state that the electrical component could be used in a mobile communication power switch or power circuit, a mobile telephone or fixed transmitter transmission circuit, an electromechanical actuator control circuit, a satellite communication or radar application high frequency circuit, or a domestic appliance or industrial electronic actuator or control unit is. Therefore it would be obvious to modify Laing's invention by stating that the electrical component could be used in a mobile communication power switch or power circuit, a mobile telephone or fixed transmitter transmission circuit, an electromechanical actuator control circuit,

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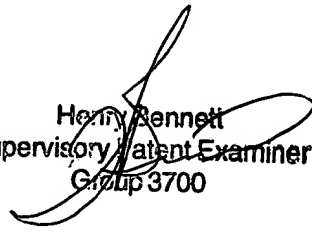
a satellite communication or radar application high frequency circuit, or a domestic appliance or industrial electronic actuator or control unit is so that one knows the limitations of the invention.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Nihir Patel whose telephone number is (703) 306-3463. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful the examiner supervisor Henry Bennett can be reached at (703) 308-0101.

NP
July 12, 2002


Henry Bennett
Supervisory Patent Examiner
Group 3700